

AMENDMENTS TO THE DRAWINGS:

The attached replacement drawing sheet includes changes to Figures 3 and 4, which appear on the same drawing sheet. This sheet replaces the originally filed Figures 3 and 4.

REMARKS

Claims 1-11 and 13 are pending in this application.

The Office Action dated December 14, 2005 has been received and carefully noted. The above amendments, the attached replacement sheet of drawings, and the following remarks are being submitted as a full and complete response thereto. Claims 1- 11 and 13 are being submitted for reconsideration. These claims have been amended to more particularly point out and distinctly claim the invention. For example, Claim 1 has been rearranged with no narrowing amendments. No new matter has been added.

The drawings were objected to as failing to comply with the proper rule since the reference character capital S was considered to be used for two different things. The dimension that is shown, i.e. the distance between the shower head and the stage (carrying the substrate) is clearly S/S. The letter capitalized by itself has been used as the substrate. The substrate is being relabeled as 11 and Figures 3 and 4 have been so modified. The specification is being amended accordingly. No new matter is being added.

Claims 6 – 11 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claim 11 is simply edited to provide antecedent basis for the structure. Claims 6 – 10 were rejected because the formatting of the claims ran parts of the claims together. This is being corrected above. No narrowing limitations have been added.

Claims 1 – 4, 11, and 12 were rejected under 35 U.S.C. §102(b) as being anticipated by United States Patent No. 5,884,009 to OKASE (hereinafter Okase). A

detailed reading was given of which element of the reference was considered to read on the claimed elements.

Claim 1 claims a film-forming apparatus in which a gas mixture prepared in a gas-mixing chamber is introduced into a film-forming chamber through a shower head to form a film on a substrate. The apparatus comprising certain specific structure arranged in certain specific relationships. The gas-mixing chamber is provided for admixing a raw gas and a reactive gas. The film-forming chamber is connected to the gas-mixing chamber. The shower head is disposed on the top face of the film-forming chamber. A stage is arranged in the film-forming chamber for placing the substrate to be processed and is capable of freely going up and down. A supply port is disposed at the peripheral portion on the bottom face of the gas-mixing chamber and supplies the gas mixture prepared in the gas mixing chamber directly to the top face of the shower head such that the gas mixture prepared in the gas-mixing chamber and fed to the shower head through the peripheral portion on the top face of the shower head flows towards the central portion of the shower head.

In the detailed explanation of Okase, certain errors are noted. The major error in the interpretation is the Office Action is that there is a gas-mixing chamber for admixing raw gas and a reactive gas allegedly in the space between 7a, b in Figure 7. The reference only speaks of process gas which is an admixture already made of the raw gas and reactive gas some place else. Claim 1 requires a separate gas-mixing chamber.

Further, Claim 1 also requires a supply port disposed at the peripheral portion on the bottom face of the gas-mixing chamber and supplies the gas mixture prepared in the gas mixing chamber directly to the top face of the shower head such that the gas mixture prepared in the gas-mixing chamber and fed to the shower head through the peripheral portion on the top face of the shower head flows towards the central portion of the shower head. The interpretation given in the Office Action is clearly erroneous since the reference numeral 73b in Okase designates the holes in the bottom disk 7c which might be equivalent to the shower head. There is no supply port on any identified perimeter in Okase. Still further, the interpretation ignores the annular dividers 72 between disks 7a and 7c which purposely block any radial flow of gas or any flow of gas towards the central portion of the shower head

Applicants submit that there is no teaching or suggestion of a separate gas-mixing chamber or the claimed supply port having the claimed relationship.

To qualify as prior art under 35 U.S.C. 102, a reference must teach, i.e. identically describe, each and every feature of a rejected claim. For at least the reasons discussed above, Okase does not disclose or suggest each and every feature recited by Claim 1. Thus, Okase does not anticipate or render obvious the invention recited by Claim 1. Hence, Applicants submit Claim 1 should be deemed allowable over Okase.

Claims 2-4, 11, and 12 depend from Claim 1. It is respectfully submitted that these dependent claims be deemed allowable over Okase for at least the same reasons Claim 1 is allowable as well as for the additional subject matter recited therein.

Claims 5 – 10 were rejected under 35 U.S.C. §103 as being unpatentable over Okase. The Office Action admitted that the reference does not teach the relative dimensions and diameter and so forth as claimed in these claims. However, it was held that it would have been obvious to one of skill in the art to optimize the apparatus dimensions and operating parameters.

This rejection is respectfully traversed.

While the discovery of an optimum value of a variable in a known process is normally obvious, one of the exceptions is when there is no teaching in the art that the particular variable is a result-effective variable. *Ex Parte Antonie*, 559 F2d 618, 620, 195 USPQ, 6, 8, (CCPA, 1977).

This rejection overlooks the fact that the only process variable or dimension variable that is discussed in Okase as being a result effective variable is the flow rate through the middle zone of the shower head versus flow rate through the peripheral zone of the shower head. This is noted in lines 20 – 28 of column 13. That is to say, there is no teaching or suggestion in the reference that any of the dimensions or items being claimed in Claims 5 – 10 were in any way a result effective variable for producing a uniform film. The Applicants have provided data shown in Figures 6 and 7 setting forth the benefits of the claimed subject matter. Absent any teaching in Okase, these claims cannot be held to be obvious.

Claim 13 was rejected under 35 U.S.C. §103 taking Okase in view of United States Patent No. 6,817,377 to REIMER et al. (hereinafter Reimer). The Office Action uses the secondary reference to teach a semiconductor processing apparatus which

includes a load-lock chamber for stocking wafers conveyed from a wafer cassette, a film-forming chamber, and a conveyer positioned between the load lock and the film-forming chamber. The Applicants have reviewed Reimer and find that it does not teach anything to overcome the above noted deficiencies of Okase. That is to say, it does not teach a specific separate gas-mixing chamber having a supply port on the periphery thereof supplying gas mixture prepared in the gas-mixing chamber directly to the top face of a shower head. Further, there is no teaching in Reimer of the specific relationships in Claims 5 – 10 as being result effective variables.

Under U.S. patent practice, the PTO has the burden under §103 to establish a *prima facie* case of obviousness. In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Both the case law of the Federal Circuit and the PTO itself have made clear that where a modification must be made to the prior art to reject or invalidate a claim under §103, there must be a showing of proper motivation to do so. The mere fact that a prior art reference could arguably be modified to meet the claim is insufficient to establish obviousness. The PTO can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. Id. In order to establish obviousness, there must be a suggestion or motivation in the reference to do so. See also In re Gordon, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (prior art could not be turned upside down without motivation to do so); In re Rouffet, 149 F.3d 1350 (Fed. Cir. 1998); In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Lee, 277 F.3d 1338 (Fed. Cir. 2002).

In view of the above, the Applicants respectfully submit that the Office Action has failed to establish a *prima facie* case of obviousness for purposes of a rejection of claims 5 – 10 and 13 under 35 U.S.C. §103.

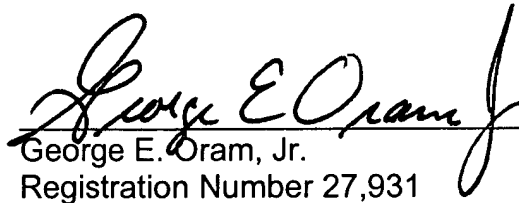
For at least the combination of foregoing reasons the Applicants respectfully submit that Okase fails to disclose or suggest the present invention as claimed in claims 1 - 13.

Consequently, for all of the above reasons, it is strongly contended that certain clear differences exist between the present invention as claimed and the prior art relied upon by the Examiner. It is further contended that these differences are more than sufficient that the present invention as claimed was not anticipated and would not have been obvious to a person of ordinary skill in the art at the time the invention was made viewing that prior art.

Accordingly, the Examiner is respectfully requested to withdraw the rejection, indicate the allowability of Claims 1-13, and pass this case to issue.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees that may be due with respect to this paper may be charged to Counsel's Deposit Account No. 01-2300, referencing Attorney Docket Number 026390-00009

Respectfully submitted,


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Enclosure: Replacement Drawing Sheet – Figures 3 and 4